

ABSTRACT

Discloses is a nondestructive inspection method of grain-boundary attack due to thermal sensitization in a chromium-containing nickel-based alloy, such as Inconel 600 alloy. The method comprises measuring a saturation magnetization $M_s(T_i)$ of a test piece at each of a plurality of measuring temperatures defined by equally dividing a given measuring temperature range in the range of a minimum to a maximum of Curie temperatures corresponding to respective chromium concentrations in a chromium impoverished region of the alloy, and then quantitatively determining an average spatial distribution of the chromium impoverished region of the test piece, or the chromium-concentration-specific volume of the chromium impoverished region adjacent to the crystal grain boundaries of the test piece, according to a given calculation formula. The present invention can solve disadvantages in a conventional method of inspecting a chromium impoverished region of a chromium-containing nickel-based alloy, such as destruction of the alloy surface caused by an etching or breaking operation, which is incongruous with the philosophy of a nondestructive inspection, and poor information about chromium impoverished region, which is obtainable only in the alloy surface.